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| 09/964,441      | 09/28/2001  | Takahisa Yamashiro   | 3777-0102P          | 1566             |

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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 09/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/964,441

Applicant(s)

YAMASHIRO ET AL

Examiner

Thomas M. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6, 7, 9-13, 16, 17 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 14, 15 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Response to Arguments***

The Applicant's Representative's well thought out and well presented Remarks have been given careful consideration. It is understood on a surface level why it is contended that "one having ordinary skill in the art would not appreciate discovering the optimum or workable ranges in these particular devices" (in reference to the Fastenemeie et al. and Haring references). However, for these devices to work, it is difficult to conceive that one having ordinary skill in the art would indeed not appreciate discovering the optimum or workable range(s). It is well within reason for anyone who has invented a device such as either reference shows, to fully intend to have their devices work effectively. Structural features in each reference support this. Fastenemeie et al. show both a frequency controller and a phase comparator meant to govern the operation of the piezoelectric means for optimum performance. Haring too shows at least a detector for such purpose.

While it is not apparent in either reference that "a difference between a resonance frequency of said ultrasonic oscillator and an anti-resonance frequency thereof is regulated to 1 kHz or more" the applicants do not claim or cite any such means to accomplish this. Thus this can only be regarded as a goal of the invention and not further limiting to the claimed structure. *In arguendo* if this can be achieved within the structure claimed by the Applicants, then too can it be achieved by

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Fastenemeie et al. as they show the same structural elements combined in the same way.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Fastenemeie et al. (EPO 0173761). The reference shows (fig. 1) an ultrasonic cleaning apparatus which cleans a subject to be cleaned by utilizing oscillation generated by an ultrasonic oscillator, comprising: a power amplifier (16) for amplifying an amplitude of a signal to supply the signal as power to said ultrasonic oscillator; a detector (1) for detecting a state of said ultrasonic oscillator; and a controller (15) for controlling a frequency of said signal depending on an output detected by the detector. It is unclear what the power supplied to the ultrasonic oscillator may be. This however is not further limiting to the claimed structure and therefore carries no patentable weight. Said detector (1) is a phase comparator for obtaining a difference between a phase of a current flowing through said ultrasonic oscillator and a phase of a voltage applied to said ultrasonic oscillator and for generating the voltage in accordance with the phase difference. Said controller (15) is a voltage control oscillation device for generating a signal having a frequency in accordance the voltage generated by the phase comparator and for controlling said phase difference within a predetermined range.

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That being the range that ensures "maximum power transfer and stability in powering ultrasonic transducer in cleaning ...". Fastenemeie shows additionally

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 5, 8, 14, 15 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fastenemeie et al. (EPO 0173761) in view of Haring (DE 40 35 828 A1). Given the invention of Fastenemeie et al. as noted above, they don't disclose that their voltage control oscillation device keeps said phase difference within  $\pm 30\%$  or show an ultrasonic phone for amplifying an oscillation speed jointed to said ultrasonic oscillator where the maximum value of an oscillation speed at a tip of the ultrasonic phone (a Langevin type device) is set to a range from 1m/s to 10m/s. Haring shows (fig. 2) an ultrasonic cleaning apparatus which cleans a subject to be cleaned by utilizing oscillation generated by an ultrasonic oscillator, comprising: a detector (9) for detecting a state of said ultrasonic oscillator; it is unclear what the power supplied to the ultrasonic oscillator may be. This however is not further limiting to the claimed structure and therefore carries no patentable weight. Said detector (9) is a phase comparator for obtaining a difference between a phase of a current flowing through said ultrasonic oscillator and a phase of a voltage applied to said ultrasonic oscillator and for generating the voltage in accordance with the phase difference. He further shows an

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ultrasonic phone (18, he shows a Langevin type device) for amplifying an oscillation speed jointed to said ultrasonic oscillator. Haring doesn't show an explicit a power amplifier for amplifying an amplitude of a signal to supply the signal as power to said ultrasonic oscillator. He doesn't show a controller for controlling a frequency of said signal depending on an output detected by the detector. The maximum value of an oscillation speed at a tip of the ultrasonic phone is unknown. It would have been obvious to one having ordinary skill in the art to employ the ultrasonic phone of Haring in the device of Fastenemeie et al. at the time of their invention since this is a well-known application of such devices as is shown by Haring. Regarding the phase difference limitation of +30% and the frequency limitation of the ultrasonic phone, neither of these further limits the claimed structure, but are however goals of the invention. Additionally regarding the method claims 18-20, it is well within the skill of a routineer in the art to so drive the device using the values selected for power, phase range and frequency, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

#### ***Allowable Subject Matter***

Claims 6, 7, 9-13, 16, 17 and 21 are allowed.

#### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Conclusion**

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd  
tmd

August 30, 2002

  
THOMAS M. DOUGHERTY  
PRIMARY EXAMINER  
GROUP 2100  
